



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2022-1482; Project Identifier MCAI-2022-00697-T; Amendment 39-22389; AD 2023-06-03]

RIN 2120-AA64

Airworthiness Directives; De Havilland Aircraft of Canada Limited (Type Certificate Previously Held by Bombardier, Inc.) Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for certain De Havilland Aircraft of Canada Limited Model DHC-8-401 and -402 airplanes. This AD was prompted by an investigation of incorrectly manufactured sleeves that were potentially installed in the main landing gear (MLG) forward door linkage assembly. This AD requires review of technical records and inspections to determine if a discrepant sleeve is installed, replacement of any discrepant sleeve and re-identification of the MLG forward door linkage assembly. This AD also prohibits the installation of affected parts. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES:

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-1482; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

Material Incorporated by Reference:

- For service information identified in this final rule, contact De Havilland Aircraft of Canada Limited, Dash 8 Series Customer Response Centre, 5800 Explorer Drive, Mississauga, Ontario, L4W 5K9, Canada; telephone North America (toll-free): 855-310-1013, Direct: 647-277-5820; email thd@dehavilland.com; website [dehavilland.com](https://www.dehavilland.com).

- You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-1482.

FOR FURTHER INFORMATION CONTACT: Gabriel Kim, Aerospace Engineer, Mechanical Systems and Administrative Services Section, FAA, New York ACO Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7300; email 9-avs-nyaco-cos@faa.gov.

SUPPLEMENTARY INFORMATION:**Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain De Havilland Aircraft of Canada Limited

Model DHC-8-401 and -402 airplanes. The NPRM published in the *Federal Register* on November 25, 2022 (87 FR 72424). The NPRM was prompted by AD CF-2022-29, dated May 27, 2022, issued by Transport Canada, which is the aviation authority for Canada (referred to after this as the MCAI). The MCAI states that some forward door linkage sleeves, part number (P/N) 46878-1, have been manufactured without lubrication grooves on the outer diameter. An investigation confirmed that incorrectly manufactured sleeves were potentially supplied from October 2019 to July 2021. A discrepant sleeve with missing lubrication grooves can result in the fatigue failure of the forward door linkage, leading to possible interference with the extension or retraction of the corresponding MLG. This condition, if not corrected and when combined with other failures, could result in an asymmetric MLG configuration at landing and a subsequent runway excursion.

In the NPRM, the FAA proposed to require review of technical records and inspections to determine if a discrepant sleeve is installed, replacement of any discrepant sleeve and re-identification of the MLG forward door linkage assembly. The FAA also proposed to prohibit the installation of affected parts. The FAA is issuing this AD to address the unsafe condition on these products.

You may examine the MCAI in the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-1482.

Discussion of Final Airworthiness Directive

Comments

The FAA received a comment from The Air Line Pilots Association, International (ALPA), who supported the NPRM without change.

The FAA received an additional comment from Horizon Air. The following presents the comment received on the NPRM and the FAA's response to the comment.

Request to Refer to Latest Revision of Service Bulletin and Allow Credit for Required Actions Using Previous Service Bulletin

Horizon Air stated De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, Revision A, dated July 21, 2022, has been released. Horizon Air asked the FAA to revise the proposed AD to refer to De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, Revision A, dated July 21, 2022. Horizon Air also asked the FAA to allow credit for required actions done in accordance with De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, dated February 28, 2022, prior to the effective date of the AD.

The FAA agrees to use the updated service information. De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, Revision A, dated July 21, 2022, including Collins Aerospace Service Bulletin 46860-32-150, Revision 1, dated June 28, 2022, does not substantively affect the requirements proposed in the NPRM and only makes minor changes by adding references to an advisory document and the MCAI AD. The FAA has revised this final rule to refer to De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, Revision A, dated July 21, 2022, including Collins Aerospace Service Bulletin 46860-32-150, Revision 1, dated June 28, 2022. The FAA has also added paragraph (i) to this AD to provide credit for actions done in accordance with De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, dated February 28, 2022, including Collins Aerospace Service Bulletin 46860-32-150, dated February 1, 2022, prior to the effective date of this AD.

Conclusion

This product has been approved by the aviation authority of another country and is approved for operation in the United States. Pursuant to the FAA's bilateral agreement with this State of Design Authority, it has notified the FAA of the unsafe condition described in the MCAI referenced above. The FAA reviewed the relevant data, considered the comments received, and determined that air safety requires adopting this

AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on this product. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Related Service Information under 1 CFR Part 51

The FAA reviewed De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, Revision A, dated July 21, 2022, including Collins Aerospace Service Bulletin 46860-32-150, Revision 1, dated June 28, 2022. This service information specifies procedures for review of the airplane records to determine the date of replacement, if any, of sleeve P/N 46878-1, a visual inspection of affected sleeves for the presence of lubrication grooves, and a visual inspection of the swivel link, clevis assembly, and swivel end assembly for discrepancies including signs of damage, deformation, erosion, and corrosion. Corrective actions include replacement of any sleeve that has missing lubrication grooves; repair or replacement of any discrepant swivel link, clevis assembly, and swivel end assembly; and re-identification of the forward door linkage. Assemble the forward door linkage, torque self-locking nuts, and re-install the forward door linkage assemblies.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Costs of Compliance

The FAA estimates that this AD affects 56 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

Estimated costs for required actions

Labor cost	Parts cost	Cost per product	Cost on U.S. operators
3 work-hours X \$85 per hour = \$255	\$0	\$255	\$14,280

The FAA estimates the following costs to do any necessary on-condition actions that would be required based on the results of any required actions. The FAA has no way of determining the number of aircraft that might need these on-condition actions:

Estimated costs of on-condition actions

Labor cost	Parts cost	Cost per product
3 work-hours X \$85 per hour = \$255 to replace the sleeve	\$1,284	\$1,539

The FAA has received no definitive data on which to base the cost estimates for the on-condition repairs specified in this AD.

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some or all of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority

because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive:

2023-06-03 De Havilland Aircraft of Canada Limited (Type Certificate Previously Held by Bombardier, Inc.): Amendment 39-22389; Docket No. FAA-2022-1482; Project Identifier MCAI-2022-00697-T.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to De Havilland Aircraft of Canada Limited (type certificate previously held by Bombardier, Inc.) Model DHC-8-401 and -402 airplanes, certificated in any category, serial numbers 4001, 4003 and subsequent.

(d) Subject

Air Transport Association (ATA) of America Code 32, Landing Gear.

(e) Unsafe Condition

This AD was prompted by an investigation of incorrectly manufactured sleeves that were potentially installed in the main landing gear (MLG) forward door linkages. The FAA is issuing this AD to address the discrepant sleeves with missing lubrication grooves, which can result in the fatigue failure of the forward door linkage, leading to possible interference with the extension or retraction of the corresponding MLG. The unsafe condition, if not corrected and when combined with other failures, could result in an asymmetric MLG configuration at landing and a subsequent runway excursion.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Airplane Records Review

Within 30 days after the effective date of this AD, review the airplane records to determine whether any sleeve P/N 46878-1 was replaced after October 29, 2019, on any MLG forward door linkage assembly P/N 46860.

(1) For any sleeve P/N 46878-1 that was replaced after October 29, 2019, and for any sleeve for which its replacement date cannot be conclusively determined from the records: Within 1,500 flight cycles after the effective date of this AD, do the actions specified in paragraphs (g)(1)(i) and (ii) of this AD, in accordance with Section 3.B. of the Accomplishment Instructions of De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, Revision A, dated July 21, 2022, including Collins Aerospace Service Bulletin 46860-32-150, Revision 1, dated June 28, 2022.

(i) Do a general visual inspection of the sleeve for the presence of lubrication grooves, and before further flight replace any sleeve that does not have lubrication grooves.

(ii) Do a general visual inspection of the MLG forward door linkage assemblies (swivel link, clevis assembly, and swivel end assembly) for damage, deformation, erosion, and corrosion, and before further flight repair or replace the discrepant parts.

(2) If the records confirm that no maintenance was performed on the MLG forward door linkage assembly P/N 46860 after October 29, 2019, no further action is required by this paragraph.

(h) Parts Installation Prohibition

As of the effective date of this AD, no person may install, on any airplane, a sleeve P/N 46878-1 with missing lubrication grooves.

(i) Credit for Previous Actions

This paragraph provides credit for actions required by paragraph (g) of this AD, if those actions were performed before the effective date of this AD, using the service information identified in De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, dated February 28, 2022, including Collins Aerospace Service Bulletin 46860-32-150, dated February 1, 2022.

(j) Additional AD Provisions

The following provisions also apply to this AD:

(1) *Alternative Methods of Compliance (AMOCs)*: The Manager, New York ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (k)(2) of this AD. Information may be emailed to: 9-AVS-AIR-730-AMOC@faa.gov or send it to ATTN: Program Manager, Continuing Operational Safety, FAA, New York ACO Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7300. Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(2) *Contacting the Manufacturer*: For any requirement in this AD to obtain instructions from a manufacturer, the instructions must be accomplished using a method approved by the Manager, New York ACO Branch, FAA; or Transport Canada; or De Havilland Aircraft of Canada Limited's Transport Canada Design Approval Organization (DAO). If approved by the DAO, the approval must include the DAO-authorized signature.

(k) Additional Information

(1) Refer to Transport Canada AD CF-2022-29, dated May 27, 2022, for related information. This Transport Canada AD may be found in the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-1482.

(2) For more information about this AD contact Gabriel Kim, Aerospace Engineer, Mechanical Systems and Administrative Services Section, FAA, New York

ACO Branch, 1600 Stewart Avenue, Suite 410, Westbury, NY 11590; telephone 516-228-7300; email 9-avs-nyaco-cos@faa.gov.

(l) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.

(i) De Havilland Aircraft of Canada Limited Service Bulletin 84-32-169, Revision A, dated July 21, 2022, including Collins Aerospace Service Bulletin 46860-32-150, Revision 1, dated June 28, 2022.

Note 1 to paragraph (l)(2)(i): De Havilland issued De Havilland Service Bulletin 84-32-169, Revision A, dated July 21, 2022, with Collins Aerospace Service Bulletin 46860-32-150, Revision 1, dated June 28, 2022, attached as one “merged” file for the convenience of affected operators.

(ii) Reserved

(3) For service information identified in this AD, contact De Havilland Aircraft of Canada Limited, Dash 8 Series Customer Response Centre, 5800 Explorer Drive, Mississauga, Ontario, L4W 5K9, Canada; telephone North America (toll-free): 855-310-1013, Direct: 647-277-5820; email thd@dehavilland.com; website dehavilland.com.

(4) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the

availability of this material at NARA, email fr.inspection@nara.gov, or go to:

www.archives.gov/federal-register/cfr/ibr-locations.html.

Issued on March 14, 2023.

Christina Underwood, Acting Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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